UNITED STATES PATENT AND TRADEMARK OFFICE

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09/849,010	05/04/2001	Richard L. Klevans	064731.0171	2501

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EXAMINER
FERRIS III, FRED O

ART UNIT	PAPER NUMBER
2128	

DATE MAILED: 06/14/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

	Application No.	Applicant(s)
Office Action Summary	09/849,010	KLEVANS, RICHARD L.
	Examiner	Art Unit
	Fred Ferris	2128

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE <u>3</u> MONTH(S) FROM
THE MAILING DATE OF THIS COMMUNICATION.
- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed
  after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
  Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any
  earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on <u>09 February 2005</u>.

2a)☒ This action is **FINAL**.   2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is
closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-13* is/are pending in the application.

    4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☒ Claim(s) *1-5, 9-13* is/are allowed.

6)☒ Claim(s) *6-8* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on <u>23 June 2003</u> is/are: a)☒ accepted or b)☐ objected to by the Examiner.

    Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

    Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

    a)☐ All   b)☐ Some * c)☐ None of:

      1.☐ Certified copies of the priority documents have been received.

      2.☐ Certified copies of the priority documents have been received in Application No. _____.

      3.☐ Copies of the certified copies of the priority documents have been received in this National Stage
application from the International Bureau (PCT Rule 17.2(a)).

    * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1)☒ Notice of References Cited (PTO-892)

2)☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3)☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
    Paper No(s)/Mail Date _____.

4)☐ Interview Summary (PTO-413)
    Paper No(s)/Mail Date. _____ .

5)☐ Notice of Informal Patent Application (PTO-152)

6)☐ Other: _____.

DETAILED ACTION

1.   *Claims 1-13 have been presented for examination based on applicant's*

amendment filed on 9 February 2005. Amended claims 1-5 and 9-13 have now been

allowed over the prior art of record. Claims 6-8 remain rejected by the examiner.

Response to Arguments

2.   *Applicant's arguments filed 9 February 2005 have been fully considered.*

Regarding applicants response to 112(1) rejection: The examiner withdraws the

112(1) rejection in view of applicants arguments and admission that elements the

claimed network simulation system were known to one skilled in that art at the time of

the invention.

Regarding applicant's response to 103(a) rejections: The examiner now

withdraws the rejection of amended claims 1-5 and 9-13 in view of applicant's

amendment to the claims filed 9 February 2005. However, the examiner maintains the

rejection of claims 6-8 using the reasoning now set forth below under 103(a) rejections.

Regarding 103(a) rejections motivation to combine: The examiner contends that

the motivation to combine Chang and Mehr is proper and in accordance with MPEP

guidelines for the following reasons. MPEP 2143.01 Suggestion or Motivation To

Modify the References first recites:

"There are three possible sources for a motivation to combine references: the nature of
the problem to be solved, the teachings of the prior art, and the knowledge of persons of
ordinary skill in the art." In re Rouffet, 149 F.3d 1350, 1357, 47 USPQ2d 1453, 1457-
58 (Fed. Cir. 1998)

Therefore, in suggesting a motivation to combine, the examiner specifically

focused his motivation on the <u>knowledge of persons of ordinary skill in the art</u> *and* <u>the</u>

<u>problem to be solved</u>. *More specifically, that a skilled artisan would have made an effort*

to become aware of what capabilities had been developed in the market place, and

hence would have knowingly modified Chang with the teachings of Mehr. (See: 103(a)

rejection below) MPEP 2144 Sources of Rationale Supporting a Rejection Under 35

U.S.C. 103 recites:

> "<u>The rationale to modify or combine the prior art does not have to be expressly stated in the prior art</u>; the rationale may be expressly or impliedly contained in the prior art or it <u>may be reasoned from knowledge generally available to one of ordinary skill in the art,</u>
> <u>established scientific principles</u>, or legal precedent established by prior case law. In re Fine, 837 F.2d 1071, 5 USPQ2d 1596 (Fed. Cir. 1988); In re Jones, 958 F.2d 347, 21 USPQ2d 1941 (Fed. Cir. 1992). See also In re Kotzab, 217 F.3d 1365, 1370, 55 USPQ2d 1313, 1317 (Fed. Cir. 2000) (setting forth test for implicit teachings); In re Eli Lilly & Co., 902 F.2d 943, 14 USPQ2d 1741 (Fed. Cir. 1990) (discussion of reliance on legal precedent); In re Nilssen, 851 F.2d 1401, 1403, 7 USPQ2d 1500, 1502 (Fed. Cir. 1988) (references do not have to explicitly suggest combining teachings)"

The examiner has simply asserted that a skilled artisan tasked with solving

problems relating to the use of network simulators and modeling tools (i.e. OPNET

Modeler as taught by Chang), and requiring a <u>hardware interface</u> *used in network*

simulation (emulation) for data transfer tasks and communicating with software

application links (i.e. as taught by Mehr), and further having access to the teachings of

Chang and Mehr, would have looked to the prior art and hence would have knowingly

modified the teachings of Chang, with the teachings of Mehr in order to realize the

elements of the claimed invention and gain the advantage of reduced cost and

development time. Specifically, a skilled artisan working in this obviously competitive

environment would have made an effort to become aware of what capabilities had

already been developed in the market place, and hence would have been aware of, and

known to seek out the relative teachings of the problem to be solved. Namely, the

teachings of Chang and Mehr.

MPEP 2143.01 Suggestion or Motivation To Modify the References further

recites the following supporting rational:

> Obviousness can only be established by combining or modifying the teachings of the prior art to produce the claimed invention where there is some teaching, suggestion, or motivation to do so found either explicitly or implicitly in the references themselves or in the knowledge generally available to one of ordinary skill in the art. **"The test for an implicit showing is what the combined teachings, knowledge of one of ordinary skill in the art, and the nature of the problem to be solved as a whole would have suggested to those of ordinary skill in the art."** In re Kotzab, 217 F.3d 1365, 1370, 55 USPQ2d 1313, 1317 (Fed. Cir. 2000).

The examiner therefore appears to have established an <u>implicit showing</u>

that in view of the <u>combined teachings of the prior art</u>, the <u>relative knowledge of one</u>

<u>skilled in the art</u>, and in particular, the <u>nature of the problem to be solved</u>, there exists

an obvious motivation to combine the references as noted in the 103(a) rejection below.

For the reasons set forth above the examiner maintains the 103(a) rejection of

claims 6-8.

Claim Interpretation

3.   *Applicants are claiming limitations relating to a system and means for a network*

simulator, defining a network functionality, redirecting network communications,

simulating network hardware, simulating network functionality, and generating simulated

network hardware/software responses in a network simulation system that includes a

simulator library and user interface. The examiner notes that these features are

generally inherently provided by commercially available network simulators such as

OPNET Modeler, BONeS, and COMNET since these products provide modeling and

manipulation of simulated network transmission paths and network components so that

system performance and software functions can be tested prior to actual system

implementation and equipment purchase. (See: Chang Section 1.0, for example)

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all

obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

The factual inquiries set forth in *Graham* v. *John Deere Co.*, 383 U.S. 1, 148

USPQ 459 (1966), that are applied for establishing a background for determining

obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

4.   Claims 6-8 are rejected under 35 U.S.C. 103(a) as being unpatentable over

"Network Simulations with OPNET", X. Chang, Proceedings of 1999 Winter

Simulation Conference, IEEE 1999 in view of U.S. Patent 6,571,356 issued to Mehr

et al.

Regarding independent claim 6: Chang discloses the commercially available

OPNET Modeler network simulator and modeling tool used for the development and

analysis of communications networks. (pp. 308, Section 2.0, pp. 309, Section 2.1.1)

Chang further discloses the OPTNET Modeler operating as a <u>network simulation</u>

<u>system</u> providing <u>simulated hardware</u> running on standard workstations with graphical

capabilities (pp. 308, paragraph 2, Section 2.0, pp. 311, Section 3.0, Figs. 1-3, 8-10).

The OPNET Modeler provides a GUI based user interface for developing a simulated

network model including a Network Editor, Node Editor, Process Editor, Simulation &

Debugging tool, Probe editor, Analysis tool, Filter tool, Animation tool, and a Model

Library that includes models for popular network architectures (fiber optic, LAN,

Ethernet, x.25, etc.) and models for popular vendor network hardware (routers,

amplifiers, etc.). OPNET Modeler therefore allows the user to fully <u>define and simulate</u>

<u>the functionality</u> of a simulated network and related components. (See: OPNET

Modeler product brochure, Mil 3 Inc., 1999, Model Library, Standard Models)

     Chang discloses the following elements of the present invention:

-     **<u>user interface</u>** for entering commands for creating simulated network,

     defining topology of said simulated network, and invoking simulated network,

     user Interface in communication with network simulation system: Chang

     discloses a <u>user interface</u> for setting up network performance criteria values

     (power, s/n ratio, etc.) using OPNET's Network Model and Simulation Editor.

     (page 309, Section 2.1.1, 2.2.1) Chang further discloses OPNET's Node Editor

     for creating and modeling components (modules) that make up the optical

     network. (page 309, sections 2.1.1 and 2.1.2) OPNET's Model Library includes

     models for popular vendor hardware component (devices) modules and allows

     the user to fully <u>define and simulate the functionality</u> of a simulated network and

related components. *(See: OPNET Modeler product brochure, Mil 3 Inc., 1999,*

Standard Models, Vendor Device Models)

- **network simulator** *for* **simulating and defining functionality of simulated**

  network *and in communication with hardware interface: The OPNET Modeler*

  provides a GUI based user interface for developing a simulated network model

  capable of redirecting, and translating network communication including a Network

  Editor, Node Editor, Process Editor, Simulation & Debugging tool, Probe editor,

  Analysis tool, Filter tool, Animation tool, and a Model Library that includes models for

  popular network architectures (fiber optic, LAN, Ethernet, x.25, etc.) and models for

  popular vendor network hardware (routers, amplifiers, etc. i.e. simulated hardware)

  for simulating the **functionality of network components**. *(Chang: pp. 308,*

  paragraph 2, Section 2.0, pp. 311, Section 3.0, Figs. 1-3, 8-10, also see: OPNET

  Modeler product brochure, Mil 3 Inc., 1999, Model Library, Standard Models)

- **simulator library** *providing application programmers interface for*

  creating simulated network defining functionality of network and in

  communication with network simulator and user interface: The OPNET Model

  (simulator) disclosed by Chang includes a model library includes for popular

  network architectures (fiber optic, LAN, Ethernet, x.25, etc.) and models for

  popular vendor network hardware elements (routers, amplifiers, etc. i.e.

  simulated hardware). (Chang: pp. 309, sections 2.1.1 - 2.1.3, also see: OPNET

  Modeler product brochure, Mil 3 Inc., 1999, Standard Models)

Chang does not explicitly disclose a _hardware interface_ intercepting/redirecting communications.

Mehr discloses a _hardware interface_ used in network simulation having component ports for carrying out various emulator programming and data transfer tasks and communicating with software application links. (Abstract, CL2-L3-25, Figs. 1, 2)

Mehr discloses the elements of the claimed limitations of the present invention as follows:

- hardware interface intercepting/redirecting communications between software and hardware and returning responses to software: Mehr discloses a _hardware interface_ for performing data transfer tasks and communicating with software application links. The hardware interface further includes a _network interface_ (CL2-L20, Figs. 1) and _data router_ (Fig. 2, block 34) for _intercepting and redirecting_ communications between hardware and software processes. (CL4-L1-7, CL6-L2)

It would have been obvious to one having ordinary skill in the art at the time the claimed invention was made to modify the teachings of Chang relating to the use of OPNET Modeler network simulator and modeling tool, with the teachings of Mehr relating to a _hardware interface_ used in network simulation (emulation) for data transfer tasks and communicating with software application links, to realize the claimed **network simulation system** including the _hardware interface and simulated hardware_ for generating responses to software. An obvious motivation exists since, in this case, the Chang reference teaches to the Mehr reference, and the Mehr reference teaches to the

Chang reference. Specifically, both Chang and Mehr teach network simulation and are used in the same technical arena as noted above. Chang teaches to Mehr because Chang discloses the simulation of various network hardware components in communication with simulated network components (See: Chang Section 2.0-2.2.1)). Mehr teaches to Chang because Mehr specifically discloses the use of emulated (simulated) hardware communicating with software applications over a network. (See: Mehr CL2-L3-25, CL4-L1-7) Further, the level of skill required by an artisan to realize the claimed limitations of the present invention is clearly established by both references. (See: Chang/Mehr, Abstract/Background) Accordingly, a skilled artisan having access to the teachings of Chang and Mehr, would have knowingly modified the teachings of Chang with the teachings of Mehr (or visa versa) to realize the claimed elements of the present invention.

Per dependent claim 7: Chang discloses a topology manager via the Network editor and Node editor that allow the user to create a simulated network topology consisting of node and links. (pp. 309, Sections 2.1-2.2.1, Figs. 8-10) Chang also discloses the functions of an event handler via the Simulation editor that allows the user to direct communication and manage the simulation of network events. (pp.309, Section 2.2.1)

Per dependent claims 8: Chang discloses the simulation of all network components including the end station (end-to-end) modeling of network components from the model library. (pp. 311, section 3.0, Figs. 3, 4, 8)

Allowable Subject Matter

5.   *Claims 1-5 and 9-13 have now been allowed over the prior art of record.*

The following is an examiner's statement of reasons for allowance:

Applicants are disclosing system for simulating hardware on which software is to be tested inclusive of a hardware interface intercepting/redirecting communications, a network simulation system in communication with hardware interface, a user interface for entering commands for creating simulated network, a network simulator for simulating functionality of simulated network, and a simulator library providing application programmers interface.

While these elements are individually disclosed in the prior art, the prior art of record does not meet the conditions as suggested in MPEP section 2132, namely:

*"The identical invention must be shown in as complete detail as is contained in the ... claim." Richardson v. Suzuki Motor Co., 868 F.2d 1226, 1236, 9 USPQ2d 1913, 1920 (Fed. Cir. 1989). The elements must be arranged as required by the claim, but this is not an **ipsissimis verbis** test, i.e., identity of terminology is not required. **In re Bond**, 910 F.2d 831, 15 USPQ2d 1566 (Fed. Cir. 1990)."*

*In particular, the prior art of record does not disclose the specific arrangement of elements including <u>an **emulator stub communicating with a hardware interface** for translating the communications between a network simulator and hardware interface,</u> and an <u>**event handler for directing the communications** received by the emulator stub and returned to the emulator stub,</u> as now recited in the independent claims 1 and 9 respectively.*

The closest prior art uncovered during examination teaches certain limitations of the claimed invention as follows:

- *"Network Simulations with OPNET", X. Chang:* Teaches the OPNET Modeler *network simulator* for simulating and defining functionality of simulated network and developing a simulated network model including a Network Editor, Node Editor, Process Editor, Simulation & Debugging tool, Probe editor, Analysis tool, Filter tool, Animation tool, and a Model Library but does not explicitly teach an arrangement of elements including *an emulator stub communicating with a hardware interface for translating the communications between a network simulator and hardware interface,* and an *event handler for directing the communications received by the emulator stub and returned to the emulator stub.*

- *U.S. Patent 6,571,356 issued to Mehr et al:* Teaches a *hardware interface* used in network simulation having component ports for carrying out various emulator programming and data transfer tasks and communicating with software application links but again does not explicitly teach an arrangement of elements including *an emulator stub communicating with a hardware interface for translating the communications between a network simulator and hardware interface,* and an *event handler for directing the communications received by the emulator stub and returned to the emulator stub.*

The features noted above relating to the specific arrangement of hardware simulation system elements including <u>an **emulator stub communicating with a hardware interface**</u> <u>for translating the communications between a network simulator and hardware interface</u>, and an **event handler for directing the communications** <u>received by the emulator stub and returned to the emulator stub</u>, as now recited in the independent claims 1 and 9 renders the claimed invention non-obvious over the prior art of record. Dependent claims 2-5, and 10-13 are deemed allowable as being dependent from independent claims 1 and 9 respectively.

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

Conclusion

6.   Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not

mailed until after the end of the THREE-MONTH shortened statutory period, then the

shortened statutory period will expire on the date the advisory action is mailed, and any

extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of

the advisory action. In no event, however, will the statutory period for reply expire later

than SIX MONTHS from the date of this final action.

The prior art made of record and not relied upon is considered pertinent to

applicant's disclosure. Careful consideration should be given prior to applicant's

response to this Office Action.

U.S. Patent 6,366,875 issued to Colizzi et al teaches a network simulator and hardware

interface.

U.S. Patent 5,881,267 issued to Dearth et al teaches a network simulator and hardware

interface and virtual bus stubs.

"Modeling and Simulating Congestion Control in Wide-Area TCP Networks using

BONeS", M. Gream, Thesis Presentation, 1995 teaches the BONeS network simualtor.

Any inquiry concerning this communication or earlier communications from the

examiner should be directed to Fred Ferris whose telephone number is 571-272-3778

and whose normal working hours are 8:30am to 5:00pm Monday to Friday. Any inquiry

of a general nature relating to the status of this application should be directed to the

group receptionist whose telephone number is 571-272-3700. If attempts to reach the

examiner by telephone are unsuccessful, the examiner's supervisor, Jean Homere can

be reached at 571-272-3780.

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